

Interdisciplinary Journal of Partnership Studies

Volume 3
Issue 3 Fall

Article 4

10-14-2016

Developing Partnerships to Expand Interprofessional Practice-Focused Educational Experiences in High-Risk Obstetric Care

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Recommended Citation

Pott, Stephanie L. and Drake, Diana M. (2016) "Developing Partnerships to Expand Interprofessional Practice-Focused Educational Experiences in High-Risk Obstetric Care," *Interdisciplinary Journal of Partnership Studies*: Vol. 3: Iss. 3, Article 4. Available at: <http://pubs.lib.umn.edu/ijps/vol3/iss3/4>



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DEVELOPING PARTNERSHIPS TO EXPAND INTERPROFESSIONAL PRACTICE-FOCUSED EDUCATIONAL EXPERIENCES IN COMMUNITY HEALTH SETTINGS

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Abstract

Healthcare practice is continuing to shift toward interprofessional team-based care to improve the patient experience and the health of populations as well as to reduce the per capita cost of healthcare (National Center for Interprofessional Practice & Education, 2013). In particular, high-risk pregnancy is a uniquely complex healthcare challenge, which makes team- and partnership-based care in this specialty essential (American College of Obstetricians and Gynecologists' Task Force on Collaborative Practice, 2016). Despite healthcare leaders in the United States recognizing the need for collaborative care models and team-based care, the training of healthcare professions students in the skills needed to collaborate effectively as part of an interprofessional team have lagged dramatically behind the changes in current healthcare practices (Interprofessional Education Collaborative [IPEC] Expert Panel, 2011; National Center for Interprofessional Practice & Education, 2015b). A Doctorate of Nursing Practice (DNP) Student and a Women's Health DNP Program faculty identified that there was an opportunity to implement interprofessional practice-focused immersion experiences for advanced practice registered nursing (APRN) students at an academic Maternal-Fetal Medicine Center. The faculty and student partnership allowed for the project interventions to be integrated directly into an existing APRN practicum course.

This project's implementation provided an opportunity for the Maternal-Fetal Medicine Center to integrate APRN students into their clinical team, and demonstrated that interprofessional practice-focused immersion experiences are beneficial for students' learning of how to collaborate effectively as part of an interprofessional team, which is congruent with the research. The Maternal-Fetal Medicine Center embodied many of the components of the domains of interprofessional practice and qualities of a partnership-based system, making it an optimal site for interprofessional learning. This project's positive results support a sustainable and unique partnership between the School of Nursing and the Maternal-Fetal Medicine Center to expand student opportunities as members of an interprofessional team in a high-risk obstetric care setting. Continued exposure of healthcare professions students to partnership-based healthcare settings like this center may help to shift systems toward the partnership paradigm.

Key words: interprofessional practice; interprofessional collaboration; partnership; women's health; team-based care; obstetrics; education; healthcare

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INTRODUCTION

It has become evident that how patient care is provided is just as important as what care is delivered (Interprofessional Education Collaborative [IPEC] Expert Panel, 2011). According to the World Health Organization (WHO; 2010), interprofessional or collaborative practice occurs when “multiple health workers from different professional backgrounds work together with patients, families, careers and communities to deliver the highest quality of care” (p.7). Fewer mistakes are made when healthcare is provided by a team of caregivers rather than by an individual, especially when all team members are aware of each other’s responsibilities. Team-based care has been shown to improve health outcomes, the patient experience, and patient safety (Institute of Medicine [IOM], 2015; WHO, 2010). Over time, effective interprofessional practice is expected to have a significant impact on communities by increasing access to care, improving the health of the population, and reducing healthcare costs (National Center for Interprofessional Practice & Education, 2015b).

Healthcare leaders in the United States recognize the need for collaborative care models and team-based care (National Center for Interprofessional Education and Practice, 2015a). Despite this, the training of healthcare professions students in the skills needed to collaborate effectively as part of an interprofessional team have lagged dramatically behind the changes in current healthcare practices, creating a gap between what students are taught and the skills that are actually needed in the healthcare field (IPEC Expert Panel, 2011; National Center for Interprofessional Practice & Education, 2015b).

Providing student immersion experiences in interprofessional practice settings that exemplify partnership-based healthcare better prepare students for their future careers as professionals and effective members of interprofessional teams (Anderson et al., 2011; Bridges, Davidson, Odegard, Maki, & Tomkowiak, 2011; Roberts, Robinson, Stewart, & Smith, 2009). This quality improvement project implemented interprofessional practice-focused immersion experiences for APRN students in a high-risk obstetric setting. Caring for women during a high-risk pregnancy is a uniquely complex healthcare challenge, which makes team-based care in this specialty essential (American College of Obstetricians and Gynecologists' Task Force on Collaborative Practice, 2016).

BACKGROUND

A literature review of 128 scientific articles identified that interdisciplinary team-based care promotes the optimal management of complex medical conditions in pregnancy (Andreatta & Marzano, 2012). An interprofessional approach allows individuals from different disciplines to share their expertise, resources, and unique perspectives in order to work towards the common goal of improving the health and promoting wellness of the patient (Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes, Board of Global Health, & Institute of Medicine, 2015; Parsell & Bligh, 1998).

The success of a healthcare system's interprofessional collaboration partially depends on where the culture of the healthcare institution falls on the continuum of domination and partnership. Domination-based systems have a structured, top-down hierarchy. Stereotypically, leadership roles are often awarded to authoritarian personalities that may utilize force or coercion, or generate fear or guilt to elicit control (Center for Partnership Studies, n.d.; Carter, 2015). In these systems it can become culturally acceptable to be abusive and violent (Eisler, 2016). Conversely, partnership systems based on interprofessional collaboration are built on a democratic structure and have a hierarchy of actualization (one in which power is used to

support, empower, or accomplish together) rather than rigid rankings. In a partnership culture, high levels of trust, mutual respect, and regard for others are valued (Eisler, 2007; Eisler, 2016; Center for Partnership Studies, n.d.); persons address problems with those involved, forgive others after issues are resolved, avoid placing blame or directing frustration at another, seek solutions rather than continue in a problematic pattern, and give affirmation for team members' strong contributions (Eisler & Potter, 2014).

Traditionally, many healthcare institutions have been considered to be on the domination end of the spectrum, with a hierarchy that allows one profession to hold power over others (Eisler & Potter, 2014). A domination model can lead to moral distress, tension in relationships, disengagement from patient care, and bullying (Eisler & Potter, 2014). Studies continue to show that domination leads to ineffective interprofessional collaboration and, ultimately, errors in healthcare (Eisler & Potter, 2014).

To reach the highest level of success, healthcare systems must undergo a cultural transformation and become partnership-based systems (Eisler & Potter, 2014). Partnership values create healthy systems that will improve patient outcomes and foster healthy workplace environments with less violence (Eisler & Potter, 2014; Eisler, n.d.; Eisler, 2002).

Partnership systems share qualities with effective interprofessional teams. Within the partnership model, the best leader for an individual situation organically emerges, rather than determining the leader based on a rigid, structured hierarchy, which is one of the key components of effective team-based care (IPEC Expert Panel, 2011). The leader in a partnership-based system and on an effective interprofessional team empowers others to reach higher levels of functioning and to be creative, rather than controlling through an authoritarian approach (Eisler, n.d.; Eisler, 2002).

It is important that health professionals are competent in the domains of interprofessional practice outlined by the IPEC Expert Panel (2011): teams and teamwork, interprofessional communication, roles/ responsibilities, and values/ethics for interprofessional practice. When health professionals are not able to demonstrate these core competencies of interprofessional practice, there may be communication failures, conflicting roles or role ambiguity, interpersonal or power conflicts, or hierarchical differences, which can lead to mistakes and adverse effects, many of which are qualities or consequences of domination systems, too (Ndoro, 2014; Sutcliffe, Lewton, & Rosenthal, 2004).

THE PROBLEM

Healthcare has dramatically lagged behind industries like the military and aviation in which teamwork has long been a part of student and new employee training (Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes, Board of Global Health, & Institute of Medicine, 2015). The National Center for Interprofessional Practice and Education (2015b) and the IPEC Expert Panel (2011) report that there currently is a gap between the skills healthcare professions students are learning and those that are needed to effectively work as part of an interprofessional team in the rapidly changing healthcare field. There is consistent evidence of the need for better alignment of healthcare education and practice.

A Doctorate of Nursing Practice (DNP) Student (referred to as the Student Project Leader [SPL]) and a Women's Health DNP Program Faculty collaborated to develop and implement this quality improvement project at a Maternal-Fetal Medicine Center that is affiliated with a large academic health center (AHC). In 2012, the affiliated AHC had been designated as the first National Coordinating Center for Interprofessional Education and Collaborative Practice by the National Center for Interprofessional Practice and Education (AHC, 2016). Leadership within the AHC endorses the

development of new models of interprofessional education to prepare health professions students for participation in team-based care as professionals.

Currently, the Maternal-Fetal Medicine Center is home to the practices of maternal-fetal medicine specialists, genetic counselors, sonographers, patient care coordinators, and registered nurses. The professionals who are employed at this center have participated in formal training on effective communication and collaboration and regularly participate in the education of medical and genetic counseling students, obstetric/gynecology residents, and maternal-fetal medicine fellows. As an academic clinic, it is important that the professionals feel supported in their efforts to work with health professions students and to work effectively as an interprofessional clinical team. An opportunity was identified to advance the interprofessional educational experiences at this Maternal-Fetal Medicine Center in partnership with the center's healthcare professionals and a cohort of Advanced Practice Registered Nurse (APRN) students.

PROJECT PURPOSE

The SPL and Women's Health DNP Program faculty implemented interprofessional practice-focused clinical rotations for APRN students at the Maternal-Fetal Medicine Center's three clinic sites. The APRN cohort introduced a new discipline into these clinic settings. As a result, students' learning of how to collaborate effectively as part of a partnership-based interprofessional team was enhanced, and the clinic providers had an opportunity to integrate APRN students into their clinical team and expand interprofessional practice at their clinic sites.

This intervention is supported by Albert Bandura's Theory and research that has shown that immersion experiences for students in interprofessional clinical settings help to advance students' knowledge, skills, perceptions, values, and attitudes toward collaboration (Anderson et al., 2011; Roberts, Robinson, Stewart, & Smith, 2009; Bridges, Davidson, Soule Odegard, Maki, & Tomkowiak, 2011). Gilbert (2005)

states that while exposure to an interprofessional environment early in one's education is important, full immersion of students into another discipline is most effective when it occurs in the last year of their program. At that point, they will have almost fully developed their professional identity within their own discipline and will be able to focus on the interprofessional experience.

METHODS

Context

This referral-based academic Maternal-Fetal Medicine Center is located in the Midwest and has three clinic locations within a diverse metropolitan area. The Maternal-Fetal Medicine Center's professionals scheduled to work as part of the interprofessional team with an APRN student were invited to participate in an anonymous, online survey that aimed to assess their attitudes towards interprofessional learning. The survey included seven questions from the validated (internal consistency 0.76) Readiness for Interprofessional Learning Scale (RIPLS) (Reid, Bruce, Allstaff, & McLernon, 2006). The SPL in collaboration with the Women's Health DNP Program faculty, who had previously used the RIPLS survey in other clinic settings, decided not to give the entire survey due to its length. It was important to the SPL and faculty that the length of the survey fit the project's scope.

The RIPLS survey questions are divided into three assessment categories: teamwork and collaboration, patient-centeredness, and sense of professional identity. On a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), the professionals at the Maternal-Fetal Medicine Center who completed the survey scored an average of 4.45/5 in the category of teamwork, 5/5 for the category of patient-centeredness, and 3.5/5 for sense of professional identity. Although giving only a portion of the survey negates its tested validity, based on these results, it was concluded by the SPL that this academic Maternal-Fetal Medicine Center was prepared for growing as an interprofessional education site.

A convenience sample of APRN students was used for this project. The participants were recruited through an invitation sent to all Women's Health Doctor of Nursing Practice (DNP) students (nurse practitioner students) enrolled in their final year of the program at the university affiliated with the Maternal-Fetal Medicine Center. All six students (all female) who were invited volunteered to participate. They had each completed two semesters of clinical experiences at a variety of clinics with a focus on the women's health nurse practitioner's scope of practice. Interprofessional practice was already a key component of the didactic curriculum in this university's DNP program, and training in interprofessional practice had been woven throughout the last two semesters of didactic curriculum these students completed as part of their required specialty courses.

On a pre-intervention survey, the APRN students were asked to rate the degree to which they agreed or disagreed with the statement, "During the past two semesters of my APRN education, I have had opportunities to collaborate as a team with professionals from other disciplines at the point of patient care." On a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), these students' mean rating was 3.7 (SD 0.5).

Implementation Strategy

The implementation strategy relied on developing collaborative relationships across departments, leadership, and roles within the AHC, including (a) the Maternal-Fetal Medicine Center's clinics, (b) the School of Nursing, (c) the Department of Obstetrics, Gynecology, and Women's Health, and (d) students and faculty. The Student Project Leader (SPL) and Women's Health DNP Program Faculty partnered to embed this project's interprofessional practice-focused clinical experiences into the existing DNP curriculum. This faculty and student partnership in teaching allowed for integration of the student's quality improvement project directly into a concurrent APRN program course.

Each APRN student was scheduled for two clinic days at any one or two of the Maternal-Fetal Medicine Center's three clinic sites during the summer semester. The healthcare professionals at the three clinic sites were sent a description of the objectives of this quality improvement project and a statement about the importance of effective interprofessional collaboration in clinic settings. The APRN student participants attended an interprofessional practice counseling session conducted by the SPL prior to the clinic rotation. This session was completed within their scheduled class meeting time and provided an overview of the core competency domains for interprofessional practice: teams and teamwork, interprofessional communication, roles/responsibilities, and values/ethics for interprofessional practice (IPEC Expert Panel, 2011). Students were introduced to the Maternal-Fetal Medicine Center's current interprofessional team, flow of patient care, and the previous formal teamwork trainings the clinic staff and professionals had participated in. At the completion of the counseling session, all participants were given access to three key resources within the online women's health course site: (a) logistical information for the interprofessional practice-focused clinical days, (b) a student guide for the clinic rotation that provided suggestions for how to get involved and the types of patient visits to participate in, and (c) reflection questions to consider during their experiences.

Over the following two months, the students engaged in the interprofessional practice during their scheduled clinical experiences using the provided student guide and reflection questions to enrich their experience. With faculty support, a discussion board on the course website was open for students to share their experiences, ask questions of each other, and communicate with the SPL after their observations. After the six student participants completed their rotations at the Maternal-Fetal Medicine Center, the SPL conducted a debriefing session to gather and consolidate insights and lessons learned from the interprofessional immersion experience, to understand the root causes of successes and failures in the students' observed collaboration, and to determine how to modify the project in order to enhance its sustainability and improve future implementations.

In partnership with the Women's Health DNP Program faculty, the SPL developed a PowerPoint presentation to guide this session based on the "Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel" by the IPEC's Expert Panel (2011) and the "Jefferson Interprofessional Observation Guide" by Lyons, Giordano, Speakman, Arenson, and Smith (2014). The latter of these two resources was specifically designed to facilitate debriefing after an interprofessional practice-focused activity. This debriefing session was integrated into a scheduled class meeting time as part of the ongoing student and faculty partnership for the project.

Measures

There were four outcome objectives for this project:

- (a) to have APRN students actively participate on the interprofessional team on 12 clinic days at the Maternal-Fetal Medicine Center,
- (b) to have at least a 20% increase in 2/3 of the student participants' self-reported understandings of how to work effectively with interprofessional team members to enhance care,
- (c) to have an increase in 2/3 of the student participants' self-reported understandings of the roles and responsibilities of a women's health nurse practitioner as part of an interprofessional team in the care of a woman with a high-risk pregnancy, and
- (d) to have at least 60% of the Maternal-Fetal Medicine professionals agree that strengthening the alignment of women's healthcare students' education and the healthcare practice in high-risk obstetric care settings would have a positive impact on the three dimensions of the Institute for Healthcare Improvement's Triple Aim: improving the patient experience of care (including quality and satisfaction), improving population health, and reducing the per capita cost of health care (Institute for Healthcare Improvement, 2016).

These outcomes were measured through anonymous surveys completed by both the APRN students and the professionals at the Maternal-Fetal Medicine Center.

Measurement Tools for APRN Student Participants. The APRN student participants were asked to complete one pre-intervention and two post-intervention surveys, which were done with pencil and paper. A coding method was used to link the students' anonymous pre-intervention survey to their post-intervention surveys in order to compare their scores before and after participation in this project.

The first assessment tool administered to the student participants was a true pre-test/post-test survey with three Likert scale questions and one qualitative question. The second assessment tool the APRN student participants completed was the Interprofessional Collaborative Competency Attainment Survey (ICCAS). This is a 20-item self-assessment tool with a retrospective pre-test/post-test design. It is a validated tool for studying self-reported competencies related to interprofessional collaboration (Archibald, Trumpower, & MacDonald, 2014). This unique survey design was chosen to avoid students over-scoring their abilities on a pre-intervention survey, as the student participants had previously learned about the competencies of interprofessional practice through the didactic portion of their courses. The students submitted their paper surveys during this project's two in-person sessions: the interprofessional practice counseling session and the post-intervention debriefing.

Measurement Tools for Maternal-Fetal Medicine Center Professionals. The Maternal-Fetal Medicine Center's professionals who worked on a day that an APRN student participated in the clinic's interprofessional practice were asked to complete a post-intervention survey through Qualtrics, a secure online survey tool. This survey included four Likert scale questions and two qualitative questions. The surveys assessed the professionals' experience working with the students, how supported they felt by coworkers & clinic management in their work to provide a strong learning opportunity for the APRN students' and to include the students on the interprofessional clinical team, and whether or not they thought the experience was

beneficial enough to continue it in the future. The survey also inquired about ways that the experience could be improved in the future for the professionals.

ANALYSIS

The project data was organized utilizing the Excel software program on a secure computer. Paired T-tests were done to analyze the results of the ICCAS survey and paired Likert scale questions. The quantitative survey questions were summarized using the descriptive statistics of mean, standard deviation (SD), and minimum and maximum values. Students' comments made during the debriefing session were transcribed without identifiers. Common themes that emerged from students' experiences were identified through analysis of the comments shared during the debriefing session and the answers to the qualitative questions.

RESULTS

All six APRN students who participated in this quality improvement project attended the interprofessional practice counseling session, completed two days of interprofessional practice-focused clinical experiences at the Maternal-Fetal Medicine Center, and attended the project's debriefing session. Each student contributed her thoughts to the online discussion board at least once during the implementation period, and the SPL responded to every post. All six of the APRN students completed the pre- and post- intervention surveys.

Fourteen professionals or approximately 75% of those invited to participate at the Maternal-Fetal Medicine Center completed the post-intervention surveys. Those invited to respond included registered nurses, patient care coordinators, genetic counselors, sonographers, and physicians.

Outcome Objectives

Three of the four outcome objectives were met by this quality improvement project. The first outcome objective was met as all six APRN students completed two interprofessional practice-focused clinic days at the Maternal-Fetal Medicine Center. This enhanced the Maternal-Fetal Medicine Center as an interprofessional education site and added an APRN student to the interprofessional team during 12 clinic days.

The second outcome objective was also met. After the completion of the student clinical experiences, exactly 2/3 of the APRN students reported at least a 20% increase (from pre-intervention scores to post-intervention scores) in their understanding of how to work effectively with interprofessional team members to enhance care.

The third outcome objective was not met as, after completion of the interprofessional practice-focused clinic days, only ½ of the students reported an increase in their understanding of the roles and responsibilities of a women's health nurse practitioner as part of an interprofessional team in the care of a woman with a high-risk pregnancy, measured through comparing pre-intervention self-ratings to post-intervention self-ratings (difference in means (MD) 0.7, SD 0.8). The goal for this objective was to reach 2/3 of the students having an increase in their understanding.

The last outcome objective was met. Eleven of the fourteen professionals at the Maternal-Fetal Medicine Center who completed the survey "agreed" or "strongly agreed" that strengthening the alignment of women's healthcare students' education and the healthcare practice in high-risk obstetrical settings would have a positive impact on the three dimensions of the Institute for Healthcare Improvement's Triple Aim.

Additional Results

Results of Additional Surveys Completed by Maternal-Fetal Medicine Professionals.

The Maternal-Fetal Medicine Center's professionals were asked several additional

questions to enhance this project; the results are shown in Figure 1 of the Appendix. On a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), participants had a mean rating of 4.0 (SD 1.0) when asked to rate the degree to which they agreed or disagreed that working with the women's health DNP students(s) was a positive experience.

With the same rating scale, the participants' mean score was 4.1 (SD 1.1) when asked to reflect on the degree to which they agree or disagree that they had enough knowledge to support the women's health DNP students' learning of interprofessional collaboration.

The final statement that the professionals rated using the same Likert scale was whether or not they agreed or disagreed that the women's health DNP students participated in the interprofessional collaboration that occurred in the clinic. The mean score for this question was 3.9 (SD 0.6).

Results of Additional Surveys Completed by APRN Student Participants. The APRN student participants were also asked to complete additional survey questions; the results are shown in Figures 2 and 3 in the Appendix. The APRN students answered two additional questions using a Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) both before the intervention and after the intervention. After the intervention, there was a statistically significant change in student participants' self-ratings of their understanding of the roles and responsibilities of the interprofessional team at the Maternal-Fetal Medicine Center in the management of patients with a high-risk pregnancy (MD 2.7, SD 0.5). There was not, however, a statistically significant change in students' anticipation that they will prefer to work on an interprofessional team after graduation (MD 0.5, SD 0.6).

The following results are from the ICCAS survey that the APRN student participants completed after their clinical experiences at the Maternal-Fetal Medicine Center. This tool has a 7-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The

same question was asked twice; students first answered each question reflecting on what their abilities were prior to participating in the clinical experience and then answered each question about their abilities after participating in the intervention. The APRN students had statistically significant changes in their self-rated abilities to perform 14 of the 20 items assessed on the ICCAS questionnaire. These abilities included being able to: (a) express ideas and concerns in a clear, concise manner (MD 1.5, SD 1.1); (b) seek out interprofessional (IP) team members to address issues (MD 1.8, SD 1.5); (c) work effectively with IP team members to enhance care (MD 1.7, SD 1.4); (d) learn with, from, and about IP team members to enhance care (MD 1.8, SD 1.2); (e) identify and describe their own abilities and contributions to the IP team (MD 2.2, SD 1.7); (f) understand the abilities and contributions of IP team members (MD 3.0, SD 1.4); (g) recognize how others' skills and knowledge complement and overlap with their own (MD 1.8, SD 1.2); (h) use an IP team approach with the patient to assess the health situation (MD 2.2, SD 1.2); (i) use an IP team approach with the patient to provide whole person care (MD 1.7, SD 1.4); (j) include the patient/ family in decision making (MD 1.0, SD 0.6); (k) actively listen to the perspectives of IP team members (MD 2.0, SD 0.9); (l) take into account the ideas of IP team members (MD 1.3, SD 0.8); (m) develop an effective care plan with IP team members (MD 2.2, SD 1.2); and (n) negotiate responsibilities within overlapping scopes of practice (MD 2.3, SD 1.2).

The students showed positive (although not statistically significant) changes, when pre-intervention scores were compared to post-intervention scores, for their self-rated abilities to promote effective communication among members of an IP team (MD 1.3, SD 1.5), actively listen to IP team members' ideas and concerns (MD 1.0, SD 1.1), express their ideas and concerns without being judgmental (MD 1.0, SD 1.6), provide constructive feedback to IP team members (MD 1.3, SD 1.5), be accountable for their contributions to the IP team (MD 1.7, SD 1.8), and address team conflict in a respectful manner (MD 1.3, SD 1.4).

Finally, the students were asked to rate their overall experience during their participation in this quality improvement project on a scale from 1 (*very poor*) to 5 (*very good*). The mean score was 4.8 (SD 0.4, minimum 4, maximum 5). Five of the six students rated their overall experience as “very good,” the highest rating.

DISCUSSION

Summary

This project expanded the interprofessional practice-focused educational experiences at the Maternal-Fetal Medicine Center. It also demonstrated that interprofessional practice-focused immersion experiences are beneficial for students’ learning about how to collaborate effectively as part of an interprofessional team, and enhance students’ understanding of interprofessional collaboration in the field of obstetrics. This is congruent with the results of the research on the benefits of interprofessional clinical, immersion experiences.

Of note, on the true pre-test/ post-test survey for APRN students, only one of the three questions had a statistically significant positive change; however, the mean pre-intervention self-rated response was 4.5 on a scale from 1 to 5 for one of the questions. Due to the ceiling effect, there could not be a statistically significant increase in students’ self-ratings for this question. This demonstrated that the student participants, who were all in their last year of their DNP program, had a desire to work as part of an interprofessional team after graduation prior to participating in this intervention.

All of the items assessed on the ICCAS survey had a positive result. There were statistically significant positive changes in students’ self-rated abilities for more than 2/3 of the items assessed on the questionnaire.

Student comments gathered from qualitative survey questions and the debriefing session helped to further evaluate the effect this project had on the APRN students

and Maternal-Fetal Medicine professionals. The APRN students were asked to describe their understanding of the definition of “interprofessional practice” both before and after they participated in the immersion experience. Prior to the intervention’s implementation, three common themes emerged: (a) different disciplines working together towards a common goal, (b) collaboration, and (c) working towards the goals of improving patient safety and outcomes. These themes are congruent with the WHO’s (2010) definition of “interprofessional practice,” which reiterated that the student participants had knowledge about interprofessional collaboration prior to participating in this project. The students’ answers after the intervention were very similar; however, two additional themes emerged: teamwork with a shared goal of providing patient-centered care, and teamwork that improves patient satisfaction.

The students were also asked to describe what they found to be most valuable about their interprofessional practice-focused clinical experiences. Four students expressed that seeing interprofessional practice in action at the point of care was most valuable. A student described that the interprofessional practice at the Maternal-Fetal Medicine Center is like “wheels on a machine moving interdependently; one can’t move without the other.” Three students explained that they found it most valuable to see how the team was successful due to all the team members feeling empowered to share their input, as it would be listened to and respected. One student wrote:

I found it really empowering to see each team member on an even playing field feeling supported and encouraged to share his/her expertise and unique perspective and to see how this sharing of ideas resulted in a really cohesive high-quality plan of care that could never have been accomplished if each team member/ discipline had been working alone.

Two students described that their most valuable experiences were seeing how standardized frameworks of communication, such as Situation/Background/Assessment/Recommendation (SBAR) and the use of common language, truly are effective.

Other valuable experiences the students shared were observing:

- (a) practice without a structured hierarchy among professionals with different roles,
- (b) how the proximity of team members and clearly defined roles for each team member aided in the success of the interprofessional practice,
- (c) how communication through face-to-face hand-offs saves times and allows for immediate clarification of questions or concerns,
- (d) how the team leader evolved organically based on the team's membership and patient needs,
- (e) how personalities of team members impact the clinic atmosphere and success of the team's collaboration, and
- (f) how the patient was central to the interprofessional team, and the team's membership was determined by the patient's needs.

The APRN student participants were also asked to share what they were most likely to take with them from this experience into their professional practice after graduation. Three students expressed that, having had this experience, they now have a greater interest in working as part of an interprofessional team. A student stated that she is likely to seek out opportunities to work with professionals from other disciplines, as it is evident that working as a team can enhance patients' care. Three students also reported that they had gained a deeper understanding of the type of care provided by a specialty, high-risk obstetrics clinic, which will help them to better counsel patients whom they refer to this type of clinic about what their experience will be like. Lastly, one student admitted an increase in her confidence in being able to collaborate with professionals who have different expertise than her own and realized that professionals from other disciplines appreciate being included in patients' care and sought out for their expertise.

Limitations

This quality improvement project had several limitations. The small sample size (n=6) limits the generalizability of the results of this project to other groups of students and

clinic settings. A control group was not utilized to compare the results of this project. The students who participated in this quality improvement project completed clinical hours in other settings and studied primary care topics in their didactic course while completing this interprofessional immersion experience. It is not possible to determine if the changes in their abilities were a direct effect of their participation in this project or if they also gained knowledge or abilities from other aspects of their education. Also, this quality improvement project gathered short-term results; the project does not provide information on the effect interprofessional immersion experiences have on students and professionals months or years later. Although every effort was made to ensure that participation was voluntary and surveys were anonymous, it must be noted that the SPL was in the APRN student participants' DNP cohort but did not participate in this systems improvement project.

CONCLUSION

Based on the results of this quality improvement project, the interprofessional practice-focused clinical rotations were a positive experience for both the APRN students and the professionals at the Maternal-Fetal Medicine Center. The Maternal-Fetal Medicine Center embodied many of the components of the domains of interprofessional practice including the patient being central to the interprofessional team, being respectful and trusting of each team member, utilizing each team member's expertise, valuing each person's contribution, working with a fluid hierarchy of actualization, communicating clearly and effectively, and team leadership occurring organically, making it an optimal site for interprofessional learning. These qualities also suggest that this specialty center works more like a partnership-based system than one of domination.

The faculty and student partnership promoted a relationship alliance that benefited the project and the participating institutions. DNP student quality improvement projects develop from multifaceted partnerships that are fundamentally guided and supported by deepening the partnership between student and faculty. This

partnership exceeded the more conventional partnership roles and enabled the project to be integrated directly into an existing course site with online access and support for the project intervention implementation.

Implications for Practice

The results of this project support the continuation of the interprofessional practice-focused immersion experiences for APRN students at this Maternal-Fetal Medicine Center in the future; this continued relationship between the School of Nursing and the Maternal-Fetal Medicine Center will allow opportunities for students in future APRN cohorts to gain experience participating on an interprofessional team in a clinic setting. This model also could be utilized in other interprofessional, partnership-based clinics and with students from other APRN specialties. Student feedback during the debriefing session solidified the importance of providing a guide for students with suggestions for how to get involved, the types of visits to participate in, and reflection questions to consider during the experience to focus student learning.

Based on student feedback, several changes will be made to improve the experience for the next cohort of students who participate in the interprofessional practice-focused immersion experiences at this Maternal-Fetal Medicine Center. In order to provide supplemental learning opportunities during clinic downtime, journal articles about interprofessional practice in obstetric care will be provided for the students to read. Students also will be provided with a list of abbreviations (e.g. L2, RL2, and NT) that are commonly used by the interprofessional team at the Maternal-Fetal Medicine Center. Lastly, one student requested to have a longer clinical rotation at this interprofessional clinic; this may be considered in the future.

Contribution to the Science of Partnership

This quality improvement project emerged from the belief that creative faculty and student partnerships facilitate integrated learning experiences of mutuality, trust, and transformation. The partnership enhanced the promotion of connectedness to a community experience through a shared innovative learning environment. The

faculty-student partnership provided the foundation and framework for the project, which resulted in ongoing benefits to a clinic system, student participants, and the APRN course curriculum. Continued studies would be valuable on the synergistic effect of teacher and student partnerships in project development and implementation.

Exposure of students to healthcare settings with a partnership-based culture help to shift systems toward the partnership paradigm, ultimately leading to improved patient outcomes and healthier workplace environments. In further implementations of this project, it would be interesting to study the effect that the clinical experiences in a partnership-based clinic setting have on students' growth, mentally and academically, and whether it empowers them to become high-functioning professionals and interprofessional team members.

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Appendix

Figure 1: Maternal-Fetal Medicine Professionals' Post-Intervention Survey Results

	Mean	Standard Deviation	Minimum	Maximum
Overall, working with the women's health doctorate of Nursing Practice Student(s) at Maternal-Fetal Medicine was a positive experience	4.0	1.0	1	5
I felt that I had enough knowledge to be able to support the women's health DNP students' learning of interprofessional collaboration.	4.1	1.1	1	5
The Women's Health DNP students participated in the interprofessional collaboration that occurred in clinic (ex: discussions about patients' plan of care, hand-offs between team members, etc.)	3.9	0.6	3	5
Strengthening the alignment of women's healthcare student's education and the healthcare practice in high-risk obstetrical settings would have a positive impact on the three dimensions of the Institute for Healthcare Improvement's Triple Aim: to 1) Improve the patient experience, 2) Improve population health, and 3) Reduce healthcare costs	3.9	1.1	1	5

Figure 2: APRN Student Participant True Pre-Test/ Post-Test Survey Results

 = pre-intervention
  =post-intervention

	Mean	SD	Min.	Max.	Paired		
					Change in Mean	SD	p-value
I anticipate that I will prefer to work on an interprofessional team after graduation.	4.5	0.5	4	5	0.5	0.6	0.076
	5.0	0.0	5	5			
I understand the roles and responsibilities	3.0	0.6	2	4	0.7	0.8	0.102

of the women's health nurse practitioner, as part of an interprofessional team, in the care of a woman with a high-risk pregnancy.	3.7	0.5	3	4			
I understand the roles and responsibilities of the interprofessional team at a maternal-fetal medicine center in the management of patients with a high-risk pregnancy.	2.2	0.4	2	3	2.7	0.5	0.001
	4.8	0.4	4	5			
	4.5	0.8	3	5			

Figure 3: APRN Student Participant ICCAS Survey Results

	Mean	SD	Min	Max	Paired		
					Mean	SD	P-value
Promote effective communication among members of an interprofessional (IP) team	4.5	1.4	3	6	1.3	1.5	0.082
	5.8	1.2	4	7			
Actively listen to IP team members' ideas and concerns	5.5	0.8	4	6	1.0	1.1	0.076
	6.5	0.8	5	7			
Express my ideas and concerns without being judgmental	5.5	1.2	3	6	1.0	1.6	0.175
	6.5	0.5	6	7			
Provide constructive feedback to IP team members	4.2	1.6	1	5	1.3	1.5	0.082
	5.5	0.8	5	7			
Express my ideas and concerns in a clear, concise manner	4.2	1.0	3	6	1.5	1.1	0.017
	5.7	1.0	4	7			
Seek out IP team members to address issues	4.7	1.0	3	6	1.8	1.5	0.028
	6.5	0.8	5	7			
Work effectively with IP team members to enhance care	4.7	1.0	3	6	1.7	1.4	0.031
	6.3	0.8	5	7			
Learn with, from, and about IP team members to enhance care	4.8	1.0	3	6	1.8	1.2	0.012
	6.7	0.5	6	7			

Identify and describe my abilities and contributions to the IP team	4.0	1.3	2	5	2.2	1.7	0.027
	6.2	0.8	5	7			
Be accountable for my contributions to the IP team	4.5	1.4	2	6	1.7	1.8	0.067
	6.2	1.2	4	7			
Understand the abilities and contributions of IP team members	3.7	1.0	2	5	3.0	1.4	0.004
	6.7	0.8	5	7			
Recognize how others' skills and knowledge complement and overlap with my own	5.0	1.1	3	6	1.8	1.2	0.012
	6.8	0.4	6	7			
Use an IP team approach with the patient to assess the health situation	4.3	1.2	3	6	2.2	1.2	0.006
	6.5	0.8	5	7			
Use an IP team approach with the patient to provide whole person care	4.8	1.2	3	6	1.7	1.4	0.031
	6.5	0.5	6	7			
Include the patient/family in decision making	4.8	1.0	3	6	1.0	0.6	0.012
	5.8	1.2	4	7			
Actively listen to the perspectives of IP team members	4.7	0.8	4	6	2.0	0.9	0.003
	6.7	0.5	6	7			
Take into account the ideas of IP team members	5.2	0.4	5	6	1.3	0.8	0.010
	6.5	0.5	6	7			
Address team conflict in a respectful manner	4.3	1.2	2	5	1.3	1.4	0.062
	5.7	0.8	5	7			
Develop an effective care plan with IP team members	4.2	1.5	2	6	2.2	1.2	0.006
	6.3	0.5	6	7			
Negotiate responsibilities within overlapping scopes of practice	3.5	1.0	2	5	2.3	1.2	0.005
	5.8	1.0	4	7			

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